

***Risk Factors Associated with Feline Scabies at a Veterinary Clinic
in Municipal Pekanbaru***

(Faktor Risiko yang Berasosiasi dengan Scabies Kucing pada Klinik Veteriner di
Kota Pekanbaru)

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ABSTRAK

Penelitian ini menggunakan desain potong lintang untuk mengevaluasi faktor-faktor risiko yang terkait dengan skabies kucing di sebuah klinik hewan di Pekanbaru. Sebanyak 1.168 kucing diikutsertakan, dan faktor risiko yang diteliti meliputi jenis bulu, tempat tinggal, populasi, status pemberian obat cacing, dan status vaksinasi. Hasil penelitian menunjukkan bahwa jenis bulu (bulu panjang vs. bulu pendek) bukan merupakan faktor risiko yang signifikan secara statistik untuk skabies kucing. Namun, kucing berbulu panjang memiliki peluang 1,08 kali lebih besar untuk terkena skabies dibandingkan dengan kucing berbulu pendek (OR: 1,08, 95% CI: 0,68-1,69). Kucing yang tinggal di luar rumah secara signifikan lebih mungkin menderita skabies dibandingkan dengan kucing yang tinggal di dalam rumah, dengan rasio odds (OR) 5,24 (95% CI: 2,74-10). Selain itu, kepadatan populasi yang tinggi merupakan faktor risiko yang signifikan, di mana kucing yang hidup berkelompok memiliki peluang 16,93 kali lebih besar untuk terkena skabies dibandingkan kucing yang hidup sendirian (OR: 16,93 95% CI: 6,81-42,21). Status pemberian obat cacing tidak terbukti sebagai faktor risiko yang signifikan. Namun, status vaksinasi menunjukkan hubungan yang kuat dengan kejadian skabies, di mana kucing yang tidak divaksinasi memiliki peluang 1,73 kali lebih besar untuk terkena penyakit tersebut dibandingkan kucing yang divaksinasi (OR: 1,73, 95% CI: 1,08-2,75). Studi ini menyoroti tempat tinggal di luar rumah, populasi yang tinggi, dan kurangnya vaksinasi sebagai faktor risiko utama skabies kucing di populasi ini.

Kata kunci: faktor risiko; klinik; Pekanbaru; scabies kucing

INTRODUCTION

Cats are the most common
pets kept in Indonesia; in fact, this
animal can be stated as the main

patient in most small animal clinics.
One of the diseases often found in
cats is scabies, which is caused by the

mites *Sarcoptes scabiei* (Moroni *et al.* 2023; Little & Cortinas, 2021) and *Notoedres cati* (Little & Cortinas, 2021). Sarcoptic acariasis caused by *S. scabiei* has been reported rarely in cats (Singh *et al.* 2019). Clinically, common macroscopic lesion of scabies observed in cats include alopecia, intense pruritus, rough hair coat, itchy crust and scales on ear margins, face, neck and forelimbs (Ozukum *et al.* 2019; Little & Cortinas, 2021). Cats suffering from scabies, especially those that have become severe, can reduce body condition and greatly interfere with the cat's physical appearance. For medical treatment until recovery, cat owners are also required to be consistent, patient and diligent when treating cats with scabies.

Feline scabies poses a significant health risk to cats and can result in zoonotic transmission (Kumar *et al.* 2023) although the disease is one of the most often dermatologic problems diagnosed in daily feline practices. According to Sara *et al.* (2018), scabies is a parasitic disease that is often overlooked, even though this disease is an important public health problem. Scabies is distributed worldwide and

humans are highly susceptible to *N. cati* infestation and may develop pruritus and papules erythematous dermatitis, particularly on body parts that come into direct contact with infected animals, such as the forearms or abdomen, especially those who have frequent physical contact with infected cats through the same household or veterinary care team (Little & Corinas, 2021).

Various studies have reported the prevalence of scabies in cats with varying percentages. The prevalence of scabies caused by *Sarcoptes scabiei* was 6.89% at a veterinary teaching hospital in Bogor reported by Siagian & Siregar (2021), and 27.7% in stray cats (Siagian, 2022). Another report by Qudsiyati *et al.* (2023), the prevalence of scabies in an animal health centre in Pematang was 33.19% caused by *Sarcoptes scabiei*. Studies on scabies in cats at clinics in Pekanbaru are also likely still very limited, and have not even been conducted yet. Understanding the risk factors associated with its occurrence in clinical settings, especially in urban areas such as Pekanbaru, is essential to improving prevention and treatment strategies in veterinary practice.

MATERIALS AND METHODS

This study was conducted for 12 months (March 2023-March 2024) at a veterinary clinic in Pekanbaru City. A total of 1,168 feline patients were involved with the consent of the owners. The observational method

was applied in this study and specifically used a cross-sectional design (Petrie & Watson, 2013). Several risk factors studied included hair type (long-haired vs. short-haired), habitation (outdoor vs.

indoor), population (multiple vs. non-multiple), deworming (undewormed vs. dewormed) and vaccination (tricat/tetracat unvaccinated vs. tricat/tetracat vaccinated). The

observation data were processed statistically with Chi-Square (χ^2), Odds Ratio (OR) and Confidence Interval (CI) analysis (Kasjono & Kristiawan, 2019).

RESULTS AND DISCUSSION

Of the 1,168 cats observed for 12 months, the prevalence of scabies infestation was found to be 6.85% (80 cats). This prevalence is lower than that reported by Cahya *et al.* (2022) who found a scabies prevalence of 9.50% at a veterinary clinic in Magetan. The number of cases for each risk factor is presented in Figure 1, and the results of data analysis (Chi-square, Odds Ratio and Confidence Interval) are presented in Table 1. It is seen that the highest number of scabies infestation cases occurred in cats living in multiple populations, followed in sequence by outdoor cats, unvaccinated tricat/tetracat cats, undewormed cats and long-haired cats. The lowest number of the cases was found in cats kept singly or in no more than 5 cats.

The study indicates that hair type is not a major risk factor for scabies, even though long-haired cats are 1.08 times more likely to contract scabies compared to short-haired cats. While long-haired cats may seem more vulnerable to ectoparasites because of their thicker fur, this trait alone does not significantly raise the risk of scabies, which mainly spreads through direct contact with the *Sarcoptes scabiei var. canis* parasite or contaminated environments.

Therefore, scabies transmission is more likely influenced by environmental exposure and the host's immune system than by fur type. For other cases of dermatoses, such as dermatophytosis, long-haired cats are more likely to be infected with dermatophytes than short-haired cats (Sattasathuchana *et al.* 2020; Husna *et al.* 2020).

Deworming status was not found to be a significant risk factor, indicating that controlling internal parasites may not have a direct impact on the risk of scabies. This makes sense because scabies is caused by an external mite infestation rather than an internal parasite. However, one of the antiparasitic that can be used for internal and external parasite (sarcoptic mange) therapy is ivermectin (Ferraz *et al.* 2023; Papich, 2021), that is also widely used worldwide (Lozano *et al.* 2021), including in cases of cat scabies. The common use of ivermectin as an antiparasitic, both externally and internally, likely supports the conclusion that deworming is not a risk factor for scabies in this study. This idea stems from the fact that ivermectin is frequently used in small animal clinics. On the other hand, Singh *et al.* (2019) reported a case of

Sarcoptes scabiei mite infestation in cats that had been dewormed one month before the case was discovered.

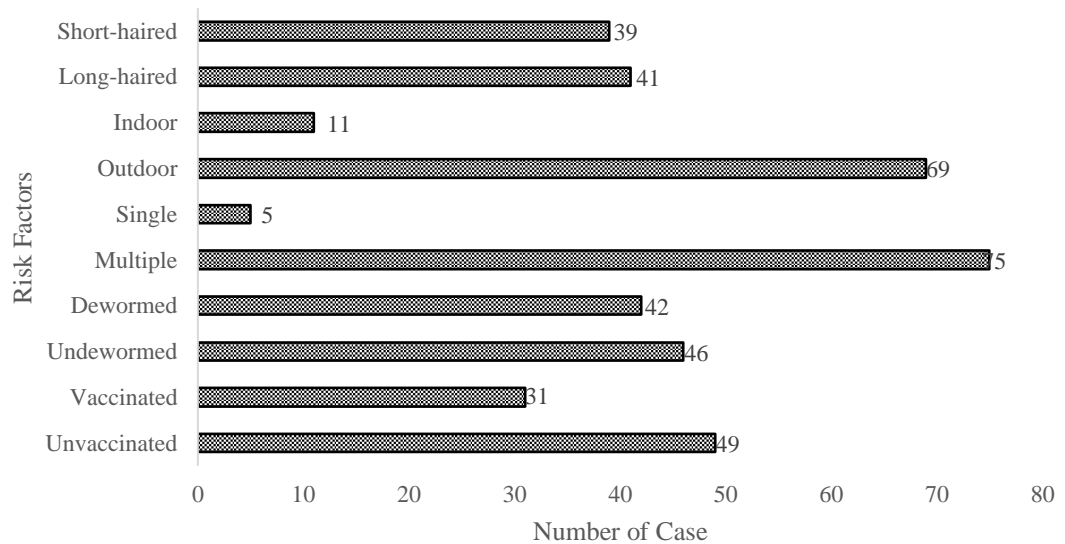


Figure 1. Number of cases of scabies infestation in cats for each risk factor examined

There was a strong and significant link between habitation and the incidence of scabies. Cats that spend time outdoors face a significantly higher risk of acquiring scabies, aligning with previous studies that emphasize the role of environmental exposure in the spread of scabies mites. According to Chalkowski *et al.* (2019), cats with outdoor access had a 2.77-fold higher likelihood of being infected with parasites compared to those kept exclusively indoors. Unrestricted outdoor access for companion cats is linked to various welfare issues, including a heightened risk of exposure to diseases and parasites (Tan *et al.* 2020). Outdoor environments increase the chances of coming into contact with infested animals or contaminated surfaces,

both of which are typical transmission pathways. Cats that go outside are more prone to interact with stray or infected animals and come across areas with mites, raising the risk of infection. This emphasizes the importance of managing the environment and restricting outdoor access to help control scabies outbreaks.

A key risk factor was population density, or whether cats lived in households with multiple cats. Cats in multi-animal environments face a much higher risk of scabies due to the greater chances of direct transmission between them. According to Spindel & Sykes (2022), cats that live in multiple-cat environments (more than 5 cats) have a higher risk of being exposed to and experiencing infectious diseases,

including dermatological infectious diseases. Cat shelters are an example of a multiple-cats environment and Notoedric mange cases are most common where direct physical contact between cats can transmit this ectoparasite (Gila *et al.* 2022). In these environments, it is common for

an infected individual to quickly spread scabies to others. Therefore, managing scabies in multi-cat households or shelters usually involves quickly isolating affected animals and taking broader measures to decontaminate the surroundings.

Tabel 1. The results of calculating χ^2 ($\alpha=95\%$, $df=1$; 3.841), OR and CI for each risk factor examined.

Risk Factors	χ^2	OR	CI
Hair Type (long-haired vs. short-haired)	0.10 ^{ns}	1.08	0.68-1.69
Habitation (outdoor vs. indoor)	29.31 ^s	5.24	2.74-10.00
Population (multiple vs. non-multiple)	67.60 ^s	16.93	6.81-42.21
Deworming (undewormed vs. dewormed)	0.01 ^{ns}	0.97	0.63-1.51
Vaccination (unvaccinated vs. vaccinated)	5.46 ^s	1.73	1.08-2.75

Superscript ^{ns} means not significant, superscript ^s means significant

The notable link between vaccination status (tricat/tetracat vaccinated) and scabies occurrence is somewhat surprising, given that scabies is caused by an external parasitic mite and isn't directly connected to the diseases targeted by typical feline vaccines (such as feline panleukopenia, calicivirus, or herpesvirus). However, this result could be explained by indirect effects related to general health. Perhaps this study is in accordance with the report of Györke *et al.* (2022) where a case of Notoedric mite infestation occurred in unvaccinated domestic cats. Another contradictory report by Singh *et al.* (2019) reported a case of

Sarcoptes scabiei infestation, which is considered rare in cats, occurring in fully tricat-vaccinated cats. Cats that are vaccinated tend to be healthier and receive better care, which may contribute to their ability to resist infections or infestations. On the other hand, unvaccinated cats are more likely to come from environments with poor care, making them more vulnerable to pathogens like mites. This relationship indicates that vaccination status might serve as an indicator of overall care and health, which in turn affects their risk of contracting external parasites like sarcoptic mites.

CONCLUSION

The findings indicate that environmental exposure and close interaction in multi-cat settings are the main factors behind scabies transmission. The results emphasize the need to manage cat populations, restrict outdoor access, and encourage regular veterinary care to lower

scabies cases. From a public health standpoint, the risk of *Sarcoptes scabiei* being transmitted to humans underscores the importance of awareness and preventive actions in environments where cats and humans closely interact, like shelters and multi-pet homes.

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